ELFRING FONTS INC.
BAR CODE 39

This package includes 18 variations of the bar code 39 font in scalable TrueType and PostScript formats, a Windows utility, Bar39.exe, to help you make bar codes, and Visual Basic macros for Excel, Access, and Word. Bar code 39 is the most popular bar code format. There are three basic versions of bar code 39 font in this set: standard 39, human readable 39 with text on the bottom, and human readable 39 with text on the top. Each of these three versions comes in six different aspect ratios. The different aspect ratios let you print bar codes with the same height, but at different horizontal character densities.

	Bar Code 39	Bar Code 39 Human Readable	Bar Code 39 Human Readable Top
Bar Code 39 Samples		1 2 3 4 A B C D	1 2 3 4 A B C D
		HIBC (Health Industry Bar Code)	
Bar Code 39 Samples		* + A 1 2 3 1 2 3 4 5 1 U *	

INSTALLATION

Our Barcod39.exe program will install this package and font set in your copy of Windows. The fonts will be installed into the proper Windows font folder automatically. Our bar code utility program, Bar39.exe, this documentation, and matching files will also be installed. The bar code fonts will appear in all Windows font menus. You can select any one of the bar code just as you normally select any other font in your application. For help in building bar codes, run the Bar39.exe utility program. To access the utility program or the documentation, click on Start, Programs, Bar Code 39, and select the program or documentation item you want to view.

USER ACCESSIBLE FILES

In Windows 11 – 7 users are not allowed to access any files stored in the Programs folder. The Visual Basic macros, label templates, and sample Excel spread sheet are placed into a folder named "Bar39" in each user's Documents area. You can find these files as follows:

Windows XP: My Documents\Bar39

Windows 7:   Libraries\Documents\ Bar39

Windows 8:   Libraries\Documents\ Bar39
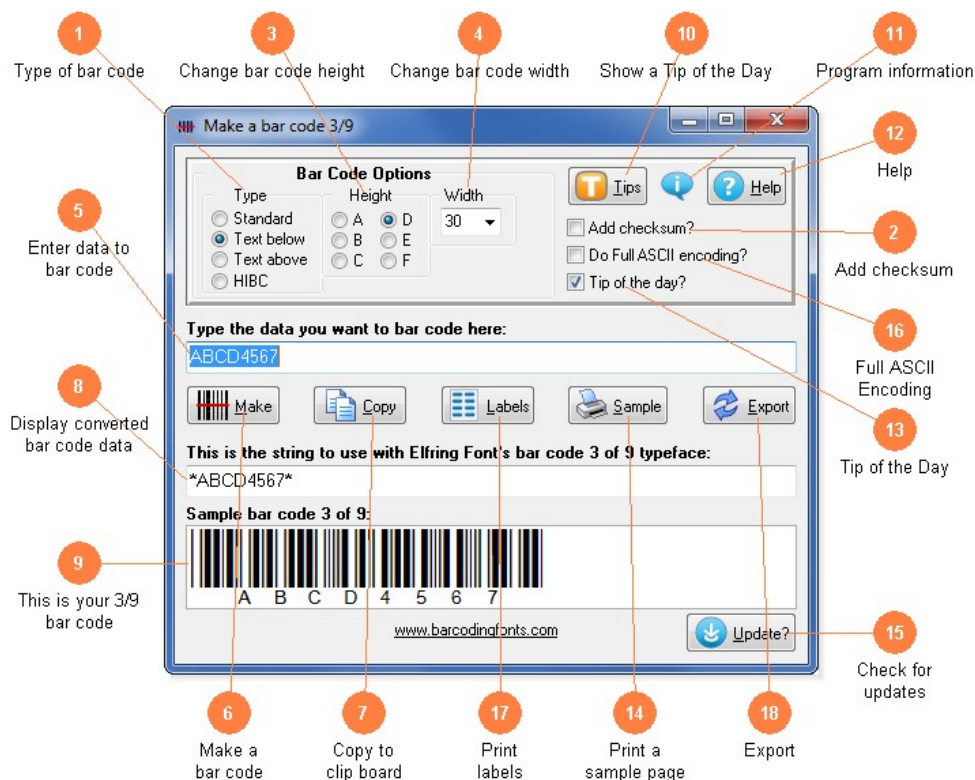
Windows 10:   Libraries\Documents\ Bar39

Windows 11:   Libraries\Documents\ Bar39

BAR CODE FONTS

This package contains three different versions of the bar code 39 font. They include a standard bar code, a human readable bar code with text below, and a human readable bar code with text above. Each version has six separate variations, so you can control bar code height and width *(or the aspect ratio)* independent of each other. This bar code set thus contains a total of 18 TrueType fonts.

Typeface Name	Bar Code 39 a	Bar Code 39 b	Bar Code 39 c	Bar Code 39 d	Bar Code 39 e	Bar Code 39 f
Bar Code 39						
Typeface Name	Bar Code 39a HR	Bar Code 39b HR	Bar Code 39c HR	Bar Code 39d HR	Bar Code 39e HR	Bar Code 39f HR
Bar Code 39 Human Readable	A B	A B	A B	A B	A B	A B
Typeface Name	Bar Code 39a HR Top	Bar Code 39b HR Top	Bar Code 39c HR Top	Bar Code 39d HR Top	Bar Code 39e HR Top	Bar Code 39f HR Top
Bar Code 39 Human Readable Top	A B	A B	A B	A B	A B	A B

BAR39 UTILITY PROGRAM

1. Type of bar code
3. Change bar code height
4. Change bar code width
10. Show a Tip of the Day
11. Program information
12. Help
5. Enter data to bar code
2. Add checksum
16. Full ASCII Encoding
8. Display converted bar code data
13. Tip of the Day
9. This is your 3/9 bar code
15. Check for updates
6. Make a bar code
7. Copy to clip board
17. Print labels
14. Print a sample page
18. Export

This utility converts your bar code 39 data into actual bar codes. Use this utility to build 39 bar codes and then to copy and paste them into other Windows programs for printing. Bar codes can be copied into Word for label printing, or into a desktop publishing program to display a bar code on your packaging. You can also export a copy of your bar code in bmp, gif, jpg, or png formats. You can choose from four different resolutions. These bar code fonts are compatible with virtually any Windows program. For programs like Excel and Access see the package documentation for details on using our Visual Basic macros directly inside of those programs.

1) Select the type of bar code 39 to create. Standard bar codes just display bar code patterns. You can also choose human readable bar codes that display the text the bar code represents either above or below it. Finally, you can select HIBC (Health Industry Bar Codes).

2) Calculate and add the option bar code 39 checksum (rarely used). This is the standard mod 43 checksum.

3) Modify the height of a bar code without changing the width. Bar codes can range from .25 to 1 or more inches in height.

4) Scale the bar code width up or down by increasing or decreasing the point size.

5) Type in the data you want to bar code here. Your data can contains numbers (0-9), upper case letters (A-Z) and the special characters: space, $ % + - . /. Our program will add the Start and Stop character for you. If you enable the optional checksum, this will be calculated and added to your bar code.

6) Click this button to make a bar code from your data. The bar code will then be displayed in the bottom window of this program.

7) Copy your completed bar code to the Windows clip board. *(The Windows clip board is invisible- don't worry about where it is or how it works.)* You can then paste this bar code directly into virtually any Windows program by pressing Ctrl-V or using the Edit, Paste menu in that program.

8) This is the string of characters to use with our bar code fonts. This string includes the Start and Stop codes plus any optional checksum. Note that while you can type in the bar code 39 font, you must always add a Start and Stop character.

9) This is a sample of what your bar code will look like. Note that Windows screen resolution is fairly low, so the bar code displayed may not exactly match what will be printed.

10) Display the next program Tip of the Day. From here you can page forwards or backwards through the entire list of available tips.

11) Display program and contact information including the version number of this software.

12) Launch the Windows Help application. The Help form will give you detailed answers to most questions about the program.

13) Display the next *Tip of the Day* on each start up when this is checked. Uncheck the box to stop this start up behavior.

14) Print a sample page of your 39 bar code to see just what it will look like. This sample page shows you your bar code in a number of different sizes. Use this printout to check bar codes you are printing yourself.

15) Check the web for a program update. You must have an active internet connection running. A web page will be displayed with information about the current version of this program and whether or not you need to update.

16) Allow Full ASCII encoding in the bar code. Note your bar code scanner must have this feature enabled or you will not see Full ASCII.

17) Print a sheet of labels. Click to open a window to select your label size, and then launch your word processor with that label template. Paste the bar code into any label and add text or graphics.

18) Export a copy of your bar code in bmp, gif, jpg, or png formats. You can choose from four different resolutions. You can email this bar code or use it in your packaging.

BAR CODE 39

Bar Code 39 is a simple bar code format. It does not require a checksum, but an optional checksum can be used in special situations. All 39 bar codes use the * *(asterisk)* to start and end a bar code. The code 39 format lets you encode numbers, capitol letters, some punctuation, and the space character in your bar code data. These fonts let you access the characters shown in Table 1:

Table 1

ASCII	Code 39		ASCII	Code 39		ASCII	Code 39		ASCII	Code 39
space	~		3	3		E	E		P	P
$	$		4	4		F	F		Q	Q
%	%		5	5		G	G		R	R
*	Start/Stop		6	6		H	H		S	S
+	+		7	7		I	I		T	T
-	-		8	8		J	J		U	U
.	.		9	9		K	K		V	V
/	/		A	A		L	L		W	W
0	0		B	B		M	M		X	X
1	1		C	C		N	N		Y	Y
2	2		D	D		O	O		Z	Z

Note that since TrueType fonts do not allow a printable character to be defined for the space position, we have mapped the actual bar code 39 space to the tilde ~ character. If you want to use Access, Excel, or Word to print bar codes, see the information on Visual Basic functions in this manual.

To print a bar code of the data 012345, you need to add a Start character to the beginning of the string, and the matching Stop character at the end of the string. So the actual string to print is *012345*. This becomes the bar code:

BAR CODE 39 CHECKSUMS

Bar code 39 supports an optional checksum. The checksum character follows your data, and is positioned before the Stop code. The checksum is calculated by assigning each character a numerical Value, summing the Values of all characters, and then performing a modulo 43 division. Table 2 shows the numerical Value assignment for bar code 39.

For example, to generate a checksum for the string "CODE 39", you look up the Values of these characters and add them together:

$12 + 24 + 13 + 14 + 38 + 3 + 9 = 113$

Now divide by 43 and use the remainder (not the result) as the checksum:

$113 / 43 = 2$ remainder 27

So the checksum has a value of 27, which from the chart above is an "R". Thus the string to use to encode a bar code 39 with checksum for "CODE 39" is

CODE~39R

Table 2

Code 39	Value		Code 39	Value		Code 39	Value		Code 39	Value
0	0		B	11		M	22		X	33
1	1		C	12		N	23		Y	34
2	2		D	13		O	24		Z	35
3	3		E	14		P	25		-	36
4	4		F	15		Q	26		.	37
5	5		G	16		R	27		space	38
6	6		H	17		S	28		$	39
7	7		I	18		T	29		/	40
8	8		J	19		U	30		+	41
9	9		K	20		V	31		%	42
A	10		L	21		W	32			

HEALTH INDUSTRY BAR CODES (HIBC)

Each Health Industry Bar Codes (HIBC) bar code starts with a + character to identify it as an HIBC code. This is followed by three fields of bar code data and then a checksum. The first field is a 4 character identifier which consists of a letter followed by 3 digits. *(This unique identifier is assigned to you by the HIBCC.)* This identifier is followed by a 1 to 13 alphanumeric product or catalog number. Finally the last character in your data is a unit of measurement digit from 0 - 9. A checksum digit is required after your data. Our software always adds the Start and Stop characters, the leading +, and the checksum.

Special Start	+	
4 Character identifier	A123	
Product / Catalog	12345	*+A1231234551U*
Measurement	1	
Checksum	U	

BAR CODE 39 FULL ASCII

Bar code 39 has only 43 characters defined for it. However, it is possible to encode all 128 ASCII characters using the Full ASCII mode of bar code 39. Note that Full ASCII is a function of the bar code reader, not the bar code. Your bar code scanner must have this feature and you must enable it in your reader before trying to scan Full ASCII data.

When a bar code reader scans Full ASCII data, it uses the symbols $ / % and + to modify the meaning of the other characters in bar code 39. So it takes two characters to create each new ASCII character. You get a much lower printer density, but can print the full ASCII character set. Table 3 shows the encoding used to generate Full ASCII. Note that if your bar code reader does not support Full ASCII mode, you will simply get the two characters you used to represent the single ASCII character.

Table 3

ASCII Char	Decimal	Code 39		ASCII Char	Decimal	Code 39		ASCII Char	Decimal	Code 39		ASCII Char	Decimal	Code 39
NUL	00	%U		Space	32	~		@	64	%V		`	96	%W
SOH	01	$A		!	33	/A		A	65	A		a	97	+A
STX	02	$B		"	34	/B		B	66	B		b	98	+B
ETX	03	$C		#	35	/C		C	67	C		c	99	+C
EOT	04	$D		$	36	/D		D	68	D		d	100	+D
ENQ	05	$E		%	37	/E		E	69	E		e	101	+E
ACK	06	$F		&	38	/F		F	70	F		f	102	+F
BEL	07	$G		'	39	/G		G	71	G		g	103	+G
BS	08	$H		(	40	/H		H	72	H		h	104	+H
HT	09	$I		)	41	/I		I	73	I		i	105	+I
LF	10	$J		*	42	/J		J	74	J		j	106	+J
VT	11	$K		+	43	/K		K	75	K		k	107	+K
FF	12	$L		,	44	/L		L	76	L		l	108	+L
CR	13	$M		-	45	-		M	77	M		m	109	+M
SO	14	$N		.	46	.		N	78	N		n	110	+N
SI	15	$O		/	47	/O		O	79	O		o	111	+O

DLE	16	$P		0	48	0		P	80	P		p	112	+P
DC1	17	$Q		1	49	1		Q	81	Q		q	113	+Q
DC2	18	$R		2	50	2		R	82	R		r	114	+R
DC3	19	$S		3	51	3		S	83	S		s	115	+S
DC4	20	$T		4	52	4		T	84	T		t	116	+T
NAK	21	$U		5	53	5		U	85	U		u	117	+U
SYN	22	$V		6	54	6		V	86	V		v	118	+V
ETB	23	$W		7	55	7		W	87	W		w	119	+W
CAN	24	$X		8	56	8		X	88	X		x	120	+X
EM	25	$Y		9	57	9		Y	89	Y		y	121	+Y
SUB	26	$Z		:	58	/Z		Z	90	Z		Z	122	+Z
ESC	27	%A		;	59	%F		[	91	%K		{	123	%P
FS	28	%B		<	60	%G		\	92	%L		|	124	%Q
GS	29	%C		=	61	%H		]	93	%M		}	125	%R
RS	30	%D		>	62	%I		^	94	%N		~	126	%S
US	31	%E		?	63	%J		_	95	%O		DEL	127	%T

ASPECT RATIOS / PRINT DENSITY

The wide to narrow ratio for these bar code fonts is 3.0. The only way to vary this ratio is to purchase a different bar code set. This bar code 39 font set includes 6 different aspect ratios of each bar code: .25 (A), .5 (B), .75 (C), 1.0 (D), 1.5 (E), and 2.0 (F). When you are building a bar code, start with the D version of the bar code font. Once you have the bar code length set to what you want, you can vary the bar code height, without changing the bar code length, by changing the font to one of the A, B, C, E, or F versions. The B version will print a bar code of exactly the same length as the D, but at .5 times the bar height. The E version will print a bar code of exactly the same length as the D, but at 1.5 times the bar height. Maximum print density *(not including Start/Stop codes)* is 6.25 characters/inch on 300 dpi printers, or 12.5 CPI on 600 dpi printers. If you exceed this print density, your bar code scanner may not be able to read the bar codes you print.

PRINTING SHEETS OF LABELS

This bar code font set adds the ability to print bar codes to other, existing Windows programs. It does not print bar code labels all by itself. It uses label templates to lay out label sheets in your existing word processor. A template tells your word processor how to arrange information to fit specific sheets of labels. Once you have a template you can use any word processor to build your own labels with bar codes. The bar codes do not have to be identical and you can also include other text or graphics on each label. Our utility will let you create a bar code and then automatically open up the label template of your choice in your word processor.

Just click on *Labels*, select a label size, and click *Print*. Your word processor will open and display the label template. Put the cursor in the first label and paste your bar code there. Adjust the size of the bar code to fit the label by changing the font name and point size.

This package includes label templates in RTF format *(compatible with virtually all word processors)* for most popular label styles. You can open any of these templates in your word processor to lay out a label. To locate these files using your word processor click on Open and then select the "Libraries\Documents" folder. Look for a new subfolder with the name: \Bar39.

Template	Label Size	Labels/Sheet
ef167.rtf	1.75 x 0.50	80
ef570.rtf	1.75 x 1.25	32
ef060.rtf	2.625 x 1.00	30
ef161.rtf	4.00 x 1.00	20
ef162.rtf	4.00 x 1.33	14
ef163.rtf	4.00 x 2.00	10
ef197.rtf	4.00 x 1.50	12
ef164.rtf	4.00 x 3.33	6

Our Bar39.exe utility also lets you use your own custom label template. See your word processor manual for details on how to create a template, or download one from your label supplier. Once you have your own custom template, save the template file *(in rich text format)* in the Libraries\Documents\Bar39 folder with the file name "custom.rtf". Our Bar39.exe utility will directly access that template to let you easily print labels.

EMBEDDING BAR CODE FONTS IN PDF FILES

The fonts in this bar code set are not embeddable. When you embed a font in a PDF document, you are actually distributing a copy of that font with every single PDF file you generate. Your PDF generator glues a copy of the bar code font to the end of each PDF file it builds. This font is then installed on every computer that views the PDF document.

Embeddable versions of these fonts are available, at additional cost. Pricing for this add-on font set is based on how many computers the embeddable fonts will be installed on and how many people will view the PDF files. When your purchase an embeddable add-on font set you receive a new version of these fonts, and the new fonts will embed in PDF files. You must contact Elfring Fonts to order an embeddable add-on font set.

VISUAL BASIC MACROS FOR ACCESS, EXCEL, AND WORD

This package contains Visual Basic macros that let you automatically build bar code 39 strings in Excel, Access, and indirectly in Word. These macros, and a sample Excel spread sheet that uses them, are located in a folder called Bar39 under your My Documents folder. (**My Documents\Bar39**) This set includes the following functions:

Table 4

Function	Details
Bar39(Text)	Converts the input text data into a complete bar code 39. The function adds the Start code, throws away all characters that aren't in standard bar code 39, appends the data, and puts the Stop code at the end. This result must be formatted with one of the following typefaces: Bar Code 39 a, Bar Code 39 a HR, Bar Code 39 b, Bar Code 39 b HR, Bar Code 39 c, Bar Code 39 c HR, Bar Code 39 d, Bar Code 39 d HR, Bar Code 39 e, Bar Code 39 e HR, Bar Code 39 f, Bar Code 39 f HR.
Bar39cs(Text)	Converts the input text data into a bar code 39 with checksum. The function adds the Start code, throws away all characters that aren't in standard bar code 39, appends the data, calculates and appends the

	checksum, and puts the Stop code at the end. This result must be formatted with one of the following typefaces: Bar Code 39 a, Bar Code 39 a HR, Bar Code 39 b, Bar Code 39 b HR, Bar Code 39 c, Bar Code 39 c HR, Bar Code 39 d, Bar Code 39 d HR, Bar Code 39 e, Bar Code 39 e HR, Bar Code 39 f, Bar Code 39 f HR.
Bar39fa(Text)	Converts the input text data into a bar code 39 in Full ASCII mode. Note your bar code reader must have Full ASCII mode enabled to use this function! The function adds the Start code, converts characters that aren't in standard bar code 39 into their Full ASCII character pairs, appends the data, and puts the Stop code at the end. This result must be formatted with one of the following typefaces: Bar Code 39 a, Bar Code 39 a HR, Bar Code 39 b, Bar Code 39 b HR, Bar Code 39 c, Bar Code 39 c HR, Bar Code 39 d, Bar Code 39 d HR, Bar Code 39 e, Bar Code 39 e HR, Bar Code 39 f, Bar Code 39 f HR.
HIBC(Text)	Converts the input data into an HIBC (Health Industry Bar Code) complete with leading + and trailing checksum. This result must be formatted with one of the following typefaces: Bar Code 39 a HR, Bar Code 39 b HR, Bar Code 39 c HR, Bar Code 39 d HR, Bar Code 39 e HR, Bar Code 39 f HR.

Warning!

Unlike our utility program, *Bar39.exe*, these Visual Basic functions do **very** limited error checking. You must make sure that the data you send to the function is correct! If you send bad data, your bar codes may be unreadable or they may not encode the data you think they have. Please use the *Bar39.exe* utility program to verify that your data is correct before using these Visual Basic functions to mass produce bar codes.

Using Visual Basic Functions in Excel

Open the spread sheet you want to add bar code 39 functions to *(or create a new spread sheet)*. Click on Tools, Macros, then Visual Basic Editor. In the Visual Basic Editor tool, click on File, Import File, and select the drive and folder where you installed our Bar Code 39 package *(probably Bar39)*. The Visual Basic file **VBbar39.bas** should appear there. Select this file and open it. This will add a new module, EFBAR39, to your spread sheet. This module adds the three functions *(see Table 4)* to your spread sheet and is saved along with it.

These bar code functions can be used in any formula or cell to build working bar codes. For example, if cell H9 is defined as a text cell *(Format, Cell, Number, Text)* and cell I9 has the formula =Bar39(H9), then any text entered in cell H9 will be converted into a bar code string in cell I9. Note that you also need to select the proper typeface for that bar code type, using Format, Cell, Font. See Chart 1 for applicable font names.

Using Visual Basic functions in Access

Open the database where you want to add bar code 39 functions *(or create a new database)*. Under your database Objects, click on Modules, then click on the New icon at the top of the box. This will bring up the Visual Basic Editor tool. Click on File, Import File, and select the drive and folder where you installed our Bar Code 39 package *(probably Bar39)*. The Visual Basic file **VBbar39.bas** should appear there. Select this file and open it. This will add a new module, EFBAR39, to your database. This module adds three new functions to your database and is saved along with it. Table 4 lists these functions.

These bar code functions can be used in a report to build working bar codes. To use these functions, pass data to them from your table fields and return the result in a report. You do this by entering a formula =Bar39([table.field]) in the control source field of the report. Note that you need to select the proper typeface for that bar code subset. See Chart 1 for a complete listing of font names.

Using Visual Basic functions in Word

While Word does have the ability to use VBA functions in macros, you need to be a macro expert to use these functions. You can, however, combine Word and Excel to print bar code 39! The basic idea is to keep your data in Excel, and to have Excel format the data for bar code printing. You then do a mail merge in Word, selecting the formatted string from Excel as the data source.

Place your data in Excel in a specific column. You then apply one of our bar code functions to the data in that column, producing a second column that contains the formatted string. This second column is passed to Word in the mail merge. You must make sure to select the proper subset typeface for your mail merge field. See Chart 1 for a complete list of font names. Also note that the on-screen display of the bar code will not look correct. Only the data printed by the mail merge will be in the correct bar code 39 format.

Glossary

Application Program: a computer program that performs useful work not related to the computer itself. Examples are word processors, spreadsheets, accounting systems, and engineering programs.

ASCII: American Standard Code for Information Interchange – a standard code for representing characters as numbers that is used on most microcomputers, computer terminals, and printers.

Aspect ratio: the ratio of height to width.

Character string: a sequence of characters stored in a computer and treated as a single data item.

Checksum: a number that accompanies data transferred from one place to another and helps to ensure that the data was transferred correctly.

Clipboard: a holding area to which information can be copied in order to transfer it from one application to another.

CPI: characters per inch.

DPI: dots per inch: the number of pixels or printer dots per linear inch.

Font: a complete collection of characters, in a consistent style and size. This includes upper and lower case letters, numerals, punctuation, ligatures, and reference marks.

HIBC: Health Industry Bar Code, used in the medical field.

Modulo: a mathematical operation that gives the remainder when one number is divided by another.

Pixels: one of the individual dots that make up a graphical image.

Radio button: small circles in a dialog box, only one of which can be chosen at a time. Choosing any button with the mouse causes all the other buttons in the set to be cleared.

Scalable: able to be used on a large or small scale without major changes.

Symbology: a method of representing information by printed characters.

TrueType Font: an outline typeface that can be scaled or sized to practically any size.

Scanner: a device that enables a computer to read printed or handwritten page.

Start Code: the leading character of a bar code that identifies what kind of bar code it is.

Stop Code: the last character of a bar code that tells the bar code reader when it has reached the end of the code.

Utility: a program that assists in the operation of a computer but does not do the main work for which the computer was bought.

Visual Basic Macros: a small program written in Visual Basic and used in some products like Excel, Access, or Word to help create bar codes.